How Should Income from Multinationals be Taxed?

by

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How *should* multinational be treated under the tax law? How are they in fact taxed? How can we best explain the difference between actual policies and the optimal policies implied by existing theories? These questions are becoming increasingly salient, given the growing importance of multinationals in the global economy.

The tax treatment of multinationals is one of the most esoteric parts of the tax law. Any discussion must necessarily deal with the interactions of the tax laws among different countries. It must take into account provisions in various bilateral tax treaties, and also take account of OECD rules restricting available options for the design of the tax law.

Unavoidable as well is a discussion of problems with tax enforcement when considering the tax treatment of multinationals. Measuring the overall income of a multinational is much more difficult than for a purely domestic firm, since the domestic government does not have direct access to the financial records of foreign financial intermediaries when seeking to verify a firm's reported earnings. In addition, the government needs to identify not only how much the multinational earned in total but also *where* this income was earned, since the statutory tax treatment depends on the source of this income. Firms can easily engage in transfer pricing to manipulate the reported location of their income, and governments cannot easily double-check all reported transactions prices within a multinational.

While most of the existing literature focuses on the tax treatment of cross-border capital investments by firms, we focus as well on the tax treatment of the above-normal return to multinationals arising from past entrepreneurial efforts. As seen below, existing tax rules come close to what the theory recommends for the tax treatment of entrepreneurial income, but differ dramatically from what the theory recommends for the taxation of income from cross-border investments.

We can then reconcile many aspects of the tax treatment of cross-border income flows if countries do not desire to tax the return to savings, only to impose a uniform tax on the return to labor effort, and if governments face pressures from income shifting between the personal and corporate tax base by employees of foreign subsidiaries. Given this income shifting, host-country governments have an incentive to tax the income of foreign subsidiaries located in the country, to lessen this income shifting by the subsidiary's employees. Home-country governments have an incentive to impose a sufficient tax at repatriation to avoid any tax avoidance by multinationals through transfer pricing. Given the tax rates used in

the host country, the optimal home-country tax is entirely consistent with OECD rules governing worldwide taxation.

The outline of this paper is as follows. Section 1 provides an initial development of the theory in a closed economy setting when there is potential income shifting by entrepreneurs. Section 2 then provides the theoretical analysis of optimal tax policies towards cross-border activity in both home and host countries in response to both by portfolio investors and FDI undertaken by multinationals. Section 3 compares actual tax policies to those forecast by the theory. The section then expands on the initial theory to consider income shifting not only by entrepreneurs but also by other employees in a firm and argues that the forecasts from this extended theory are much more consistent with observed policies. Finally, section 4 provides brief conclusions.

1. Optimal design of a corporate tax in a closed economy

In this section, we explore how the tax law can be designed to impose a tax at some rate *m* on labor income and rate *n* on income from savings, in a setting with both non-corporate and corporate activity and in which entrepreneurs can easily shift their earnings between the personal and the corporate tax bases. We begin by examining the tax treatment of non-corporate activity, where shifting is not an issue and then consider the tax treatment of corporate activity.

Tax treatment of non-corporate business income

Given the desired tax structure, we assume a personal tax rate of *m* on wage and salary income and *n* on income from financial assets. How, though, should income from a non-corporate firm be taxed, given that it consists of both labor income and income from savings?

One key assumption that will drive our analysis is that the desired tax rates on labor income is the same regardless of the source of the income. In particular, the desired tax rate is the same whether the individual is an employee or a business owner. Similarly, we assume that the desired tax rate on savings is the same whether the individual invests in financial assets or in her own business. While natural, these assumptions merits some justification.

One initial justification is the argument by Diamond and Mirrlees (1971) that in the presence of optimal proportional taxes on factor supplies and consumption bundles, the optimal tax structure should avoid any distortions to how goods are produced. Any such production distortions not only change the relative prices of different factors or different consumer goods, as would differential factor taxes or differential retail sales tax rates, but also add additional costs due to the resulting inefficiencies in production.

Saez (2002) provides a more general context for such an analysis, allowing for nonlinear tax schedules and equity considerations. He finds no grounds for making use of any tax distortions beyond a nonlinear tax on observed labor income if the following two conditions are satisfied: 1) An individual's chosen amount of some

activity conveys no additional information about his/her marginal utility of income beyond what is known based on his/her observed labor income and overall savings. (2) Any tax on some activity affects labor supply and overall savings simply due to the resulting changes in the individual's real wage rate and overall real rate of return to savings.[1]

We assume from now on that under the optimal tax structure an individual's choice between working as an employee or becoming self employed, or between investing in financial assets or instead investing in one's own firm, each should satisfy the above two conditions. In particular, we assume that these choices convey no additional information about the individual's marginal utility of income. Nor do these choices affect labor supply or overall savings, holding tax payments fixed.[2] As we proceed with the discussion, we will make the same assumption with regard to the choices to set up a corporate vs. a non-corporate business, whether to undertake business activity at home or abroad, and whether to invest one's savings in domestic vs. foreign financial securities.

Given these assumptions, there are neither equity nor efficiency grounds for any differential tax treatment of particular investments or particular locations for a firm's activity. We now turn to examining the specific implications of equal tax treatment .

In particular, how can the tax law be designed to impose a uniform tax rate on an individual's labor income, and a separate tax rate on income from savings, when an individual owns a non-corporate business whose income includes both a return to labor and a return to savings invested in the firm? One possible approach, mirroring the current tax treatment is the following: Non-corporate income can be included in the personal income tax base, taxable at rate m. The tax rate on the labor income component of this income is then the same as the rate the individual faces on any wage and salary income, avoiding any distortions to the type of employment.[3]

The effective tax rate on capital investments in a non-corporate firm depends on the chosen depreciation provisions. These provisions can be designed to yield any desired effective tax rate on new investment, even given that the resulting income net of depreciation is taxed at the same rate as applies to labor income. For example, expensing yields a zero effective tax rate on such business investments whereas economic depreciation leads to an effective tax rate equal to that on labor income.

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[1] The latter condition is just a generalization of the result in Corlett and Hague (1953) that commodity taxes should be used as a supplement to labor income taxes only to the degree that goods vary in their cross-price elasticities with leisure.

[2] See Gordon (2004) and Gordon and Kopczuk (2010), though, for examples where particular portfolio decisions might well convey information about an individual's underlying ability, even given observed labor income.

[3] To the extent that business activity generates positive spillovers, however, there could be grounds for taxing this business income at a lower rate than labor earnings, in order to internalize these spillovers. For now, we ignore such spillovers, though return to this issue below.

Distortions to the allocation of savings are then avoided if this effective tax rate on investments in a non-corporate business is the same as the effective tax rate on the return to financial savings. In particular, denote the interest rate by *r*, the exponential rate of economic depreciation by *d*, the exponential depreciation rate allowed under the tax law by δ^{nc} ,[4] and the equilibrium marginal product of capital by f_K . The investment breaks even given an opportunity cost of $r(1-n)$ if

(1)
$$V(1-m\int_0^{\infty}\delta^{nc}e^{-t\delta^{nc}}e^{-r(1-n)t}dt)=\int_0^{\infty}f_K(1-m)e^{-dt}e^{-r(1-n)t}dt$$.

Here, *V* is the cost of the investment. Denote the present value of these tax depreciation deductions by *z*, implying that $z=\delta^{nc}/[r(1-n)+\delta^{nc}]$. We then infer from equation (1) that

(2)
$$f_K=\frac{(r(1-n)+d)(1-mz)}{1-m}$$

To avoid distortions to portfolio choice, *z* must then be chosen to assure that $f_K=r$, implying that

(2)
$$z=\frac{d+r(1-n/m)}{r(1-n)+d}$$.

We then conclude that

(3)
$$\delta^{nc}=\frac{(1-n)[d+r(1-n/m)]}{n/m-n}=\delta(d,n,m)$$

With $n = m$, this implies economic depreciation, while with $n = 0$ it implies expensing. In all other cases, depreciation schedules must vary by personal tax bracket to avoid introducing portfolio distortions. The resulting link between personal tax rates and the resulting depreciation rate is captured by the function $\delta(d,n,m)$.

In such a setting, how should capital gains from non-corporate activity be taxed? Capital gains can arise for various reasons. For one, whenever the rate of tax depreciation differs from the rate of economic depreciation, the market price and the tax basis for a used asset will differ, generating capital gains (or losses). To avoid tax incentives to churn, selling capital in order to write-up the basis to the current market value at the cost of paying capital gains taxes, capital gains need to

[4] Use of double-declining balances is equivalent to exponential depreciation (ignoring the conversion to straight-line depreciation) at a rate equal to twice the stated statutory value of *d.*

be taxed at a rate equal to $g=mz$. Formally, the individual breaks even if the firm is sold after *s* years if the loss in future depreciation deductions for the initial firm and the capital gains taxes paid by the selling firm just offset the new depreciation deductions received by the acquiring firm:

$$mVe^{-\delta s}\int_0^{\infty}\delta e^{-\delta t}e^{-r(1-n)t}dt+(1-g)V(e^{-ds}-e^{-\delta s})=mVe^{-ds}\int_0^{\infty}\delta e^{-\delta t}e^{-r(1-n)t}dt \quad (3)$$

Simple algebra shows that equation (3) holds if $g=mz$, given that this capital gains tax is applied to the market value of the firm minus its tax basis, $Ve^{-ds}-Ve^{-\delta s}$, with the tax paid at realization.

Capital gains and losses can also arise due to new information, e.g. a successful entrepreneurial venture. To avoid distortions to the decision whether or not to sell the firm, what capital gains tax rate is appropriate? If the entrepreneur keeps the business, assume she earns the wage she could get elsewhere in period *t* plus R_t , where these above normal returns decay over time at some exponential rate *d*. The present value of these above normal returns, after tax, equals $\int_0^{\infty}R(1-m)e^{-r(1-n)+d}dt=R(1-m)/[r(1-n)+d].$

If instead the entrepreneur sells the firm, the equilibrium price *V* will satisfy $R/V=(r+d)=[r(1-n')+d](1-m'z')/(1-m')$, regardless of the tax bracket of the buyer as long as the tax law does not distort the buyer's choice of investment. With a capital gains tax rate of *g* and no basis, the sale yields $(1-g)V$. It quickly follows that the entrepreneur is indifferent to selling if $g=mz$.

Since *z* varies depending on the depreciation rate of a particular asset, *g* should vary depending on the depreciation rate of the asset as well.

If there is only one value for *g*, then capital gains on rapidly depreciating assets are too lightly taxed, and conversely. The compromise value for *g*, though, certainly satisfies $g<m$.

Tax treatment of corporate business income in a closed economy

Given this tax treatment of non-corporate businesses in a closed economy, how should corporate income be taxed to avoid introducing distortions to the form of business activity?

What if the above firm incorporates? For simplicity, we ignore dividends, and assume that the resulting income to the corporation is taxable solely as capital gains at realization under the personal tax.[5] We assume that the "effective" capital

[5] The key complication in introducing dividends is the need to include some explanation for why dividends are paid, in spite of the tax disadvantage of doing so relative to share

gains tax rate on accruing corporate income equals $g^e = \rho g$, where $\rho < 1$ due to the deferral of tax payments until realization but $\rho > 1$ due to the lack of indexing of capital gains for inflation.

When $g^e < m$, due to deferral and a lower statutory tax rate,[6] corporate shares are treated more favorably under the personal income tax than are non-corporate shares. This in itself creates a tax distortion encouraging the entrepreneur to redefine her income as corporate capital gains. To do so, the firm can incorporate and then retain earnings rather than paying them out to the entrepreneur as wages. Shares in the firm can then be sold at some point, generating lightly taxed capital gains.[7] We assume, though, that only the entrepreneur is in a position to engage in such income shifting, and not other employees. We return to this issue below.

A corporate tax can serve to minimize these avoidance opportunities. To do so, the corporate tax should be designed so that the effective combined corporate and personal capital gains tax liabilities are the same as the taxes due had the firm been non-corporate.

How then should the corporate tax base be defined? Sources of corporate payouts to individuals that already face the same personal tax rate as equivalent income from non-corporate firms should be deductible expenses under the corporate tax. Examples include wage payments, rents, interest payments, royalties, and payments for material inputs.[8]

To ensure that the choice of organizational form is not distorted by the tax law, the corporate tax rate needs to be chosen so that the corporate tax plus any personal capital gains taxes on the resulting after-corporate-tax earnings is comparable to the personal taxes that would be due if the income had instead been non-corporate. For business owners in personal tax bracket m, tax distortions to the form of organization (and the resulting production inefficiencies) can then be avoided if

(4a) $$(1-m) = (1-\tau)(1-g^e)$$ and if

(4b) $$\delta^c = \delta(d, n, m)$$,

repurchases. For a review of alternative theories, and the many inconsistencies between the forecasts from these theories and stylized facts about firm behavior, see Gordon and Dietz (2008).

[6] We argued above that the capital gains rate should satisfy $g = mz$, implying $g < m$.

[7] The entrepreneur can then borrow to finance current consumption, using these shares as collateral, generating further tax savings through the resulting interest deductions.

[8] The tax treatment of dividends is inconsistent with this recommendation, since dividends are typically taxable in full under the personal tax but not generally deductible under the corporate tax. Most countries, though, treat the corporate tax as a withholding tax, so that corporate taxes on the income used to finance dividend payouts is rebated in full at least to domestic individual shareholders.

where τ is the corporate tax rate and δ^c is the depreciation rate used under the corporate tax. For individuals in this personal tax bracket, all returns to labor effort (entrepreneurial income) is taxed at effective tax rate *m*, and all income from savings is taxed at rate *n*, regardless of the organizational form of the firm.

Given any value of τ, however, equation (4a) holds for only one value of $(1-m)/(1-g^e)$. The choice of a corporate tax schedule then must trade off cases where the resulting distortions go in different directions. In practice, the resulting corporate tax rate is normally below the top personal tax rate, but not by much since most of the income-shifting opportunities are available to entrepreneurs in the top personal tax brackets.[9] Those in the highest personal tax brackets then face an artificial incentive to prefer the corporate form, and conversely for those in lower personal tax brackets. Similarly, the attempt to chose the depreciation rate to satisfy equation (4b) is also inherently a compromise, with the compromise choice being too low for those with high *m* and low *n*, and conversely.

An addition problem is that τ varies across firms due to any progressive rate structure under the corporate tax schedule as well as due to incomplete loss offset arising from the inability to make full use of loss carry-backs and the drop in the present value of deductions due to loss carry-forwards.

The resulting distortions, due to variation in both *m* and τ, are at the heart of several parallel literatures dealing with corporate decisions. For one, these rate differences are the focus in discussions of the choice between corporate and non-corporate forms of business, as seen in Gordon and MacKie-Mason (1994). They are central to discussions of taxes and use of debt vs. equity finance, as in Gordon and Lee (2001). They also enter into discussions of forms of compensation, given that employees can convert wage income into capital gains through becoming self employed or receiving compensation in the form of underpriced corporate equity.[10]

While some distortions remain, existing tax structures largely seem consistent with the above theory in their tax treatment of domestic activity.

2. Optimal design of a corporate tax in an open economy

The above discussion, and much of the past literature on the effects of corporate vs. non-corporate tax rates, focuses on purely domestic firms. Yet with globalization, an increasing fraction of GDP is produced either by domestic firms with some operations abroad or by foreign firms with subsidiaries operating in the domestic market. How would the above results be extended to an open economy? We consider several specific situations in turn: outbound portfolio investment (FPI), inbound FPI, outbound FDI undertaken by domestic multinationals, and inbound FDI. Throughout, we draw on our key assumption that the optimal tax structure should

[9] Gordon and Slemrod (2000) do find that reported corporate income responds much more to the top personal tax rates than to tax rates in lower brackets.
[10] For an empirical test of the importance of these responses, see Gordon and Slemrod (2000).

avoid production inefficiencies, so avoid any distortions to how the labor supply or savings of domestic residents are allocated across firms or across locations.

a. Taxation of outbound portfolio investments

If the domestic corporate tax rate has been chosen so that $(1-m)=(1-g^e)(1-\tau)$, then individuals face no tax distortion when they choose whether to be an employee, or become an entrepreneur setting up either a non-corporate or a corporate business. Similarly, investors face no tax distortions to the *form* of their savings if $\delta^{nc}=\delta^c=\delta(d,n,m)$: they face a tax rate of *n* whether they invest their savings in bonds, a non-corporate business or corporate equity.

What if they invest some of their savings in foreign bonds? Individuals face no tax distortions to which bonds they invest in as long as the effective tax rate on the resulting interest income is the same. This occurs if the resulting interest income is taxable at rate *n* under the domestic personal income tax each year, with a deduction for any taxes due abroad (if any), e.g. withholding taxes. Uncovered interest parity implies that the pre-tax interest rates will differ due just to expected changes in the exchange rate between the two currencies. Neutrality would therefore require in addition that accruing capital gains or losses on the bond principal should be included in taxable income each year, in this case contrary to current law.[11]

What about purchases of foreign equity? To avoid distorting the type of equity individuals invest in, the country's effective tax rate must be the same on both foreign and domestic equity. The return to both forms of equity is taxed at the capital gains tax rate under the personal tax. For investments in domestic equity, there is an additional corporate tax on the retained earnings of the firms, to ensure that the combined corporate plus capital gains tax rate results in an overall tax rate of *n.* To ensure the same effective tax rate on purchases of foreign equity, the domestic corporate tax would also need to be imposed at accrual on the retained earnings attributable to the shares owned by domestic investors in foreign equity.

There are several important obstacles to such policies, however. For one, these policies imply that any publicly traded firm faces taxation by the government in each country of residence of some of its shareholders. The definition of taxable income in general will vary by country, if only due to variation in what is taxed under the personal vs. the corporate tax in each country. The result is a substantial administrative burden on any publicly traded firm.

An additional administrative problem is that non-resident governments have no access to the financial records needed to audit the tax base of foreign firms whose shares are partly owned by domestic investors.

[11] Any deviations from neutrality open up arbitrage possibilities, as emphasized in Gordon (1986), with investors going short in bonds with a high taxable interest rate and long in bonds with a low taxable interest rate.

A third administrative problem is monitoring the foreign investments of domestic residents. Foreign firms are under no legal obligation to report the earnings of their shareholders to any government other than the government in the country in which the firm is located. A (partial) solution to these problems has been bilateral tax treaties. Through such treaties most countries have agreed to some degree of sharing of information about such cross-border income flows. However, each country faces a financial interest not to follow through with such information sharing, since this information sharing makes its firms a less attractive purchase for non-resident investors. Feasible tax treaties must be mutually beneficial. When cross-border investments are not of comparable size, side payments between governments may be needed to achieve such a mutually beneficial treaty. For example, within the E.U., countries reporting cross-border interest payments to the investors' home country get to keep 75% of the resulting personal tax revenue.

The dominant problem, though, is that, by international tax conventions, a country does not have "tax nexus" to impose a corporate tax on the profits of a foreign firm, even if it has domestic shareholders, unless it is a subsidiary of a multinational based in the home country. Such a restriction is a natural way to avoid arbitrary taxes on economic activity in other countries. However, this restriction prevents countries from imposing neutral taxation on outbound FPI, leading to excess FPI. Home bias, though, may limit the resulting misallocations.

b. Taxation of inbound portfolio investment

From a domestic perspective, how should inbound portfolio investment be taxed? If the country is a price taker in the world capital market, then the Diamond-Mirrlees (1971) result implies that the income accruing to foreign portfolio owners should not be taxed.[12] This implies to begin with that this income should not be subject to withholding taxes. However, in addition it implies that the investment should not be subject to domestic corporate income taxes either. Corporate taxation of foreign capital invested in the domestic economy discourages gains from trade in capital, a distortion that should not be part of an optimal tax structure in a small open economy.

To eliminate domestic tax on inbound portfolio investments, corporate investments should be expensed to the degree that the return accrues to foreign shareholders, and depreciated at rate $\delta(d,n,m)$ to the degree that the return accrues to domestic shareholders.

Note that this tax exemption creates a strong financial incentive for domestic residents to hide information about their country of residence when investing in domestic shares. Partly, this can occur through chains of ownership, requiring complicated tracing rules to back out the residence of the underlying shareholders.

[12] When a country is not a price taker in the international capital market, a case explored by Gordon and Varian (1989), then a country should make use of the tax law to take advantage of its market power. One reason why a country might not be a price is that foreign investors are attracted to domestic securities in part for portfolio diversification and in part for hedging reasons. Given that the resulting market power seems very small, however, optimal tax rates will be very small as well.

Even sophisticated tracing rules can be thwarted by routing the investment through a holding company in a country that keeps confidential the identity of the underlying investor.

One alternative to avoid such evasion would be to exempt income from domestic corporate taxes solely on those shares coming through countries that agree to report the residence of the underlying investors. This is done currently under the withholding tax, whereby there is a high default withholding tax rate that is reduced through bilateral tax treaties. An important provision in these treaties allowing such a reduction is information sharing about the earnings abroad of domestic residents.[13]

c. Taxation of outbound FDI

If outbound FDI were a perfect substitute for outbound portfolio investment, then the domestic government would want to impose a corporate tax each year on the resulting foreign-source income, allowing depreciation deductions as under domestic tax law at rate $\delta(d,n,m)$. With this tax treatment, any entrepreneurial income retained within the foreign subsidiary becomes taxable at the domestic corporate tax rate and then taxable again as capital gains, implying an effective tax rate equal to m if equation (4a) holds.

One complication with such a tax on foreign-source entrepreneurial income based on the residence of the entrepreneur is that the tax creates an incentive on the entrepreneur to change residence. The main issue, not unique to entrepreneurs, is tax deferral. Individuals may come up with a very profitable idea, but the resulting taxable income shows up gradually over many years. Emigration can then reduce taxes due on all future taxable income generated by past effort and ideas.[14] In fact, the same situation arises whenever individuals emigrate with large unrealized capital gains on shares they own.

To neutralize those incentives created by tax deferral of capital gains, a solution would be constructive realization of these capital gains at the date of emigration. The equivalent solution for entrepreneurs would require a constructive sale by the firm or the entrepreneur of any intellectual property, with full taxation at rate m of the resulting proceeds.

d. Taxation of inbound FDI

[13] Evasion can still potentially occur, though, through routing savings first through a country that hides the identity of the investor and then through a country with an information-sharing treaty with the domestic government. Tax would then need to be imposed whenever the country of residence of the underlying investor cannot be verified.

[14] For example, prior to emigration the entrepreneur's taxes were unaffected depending on whether the firm or the entrepreneur owned the firm's intellectual property and received the resulting royalty payments. After emigration to a low-tax country, however, the entrepreneur gains from having the domestic firm make deductible royalty payments either to the entrepreneur or to foreign operations of the same firm.

To what degree do the above arguments change when the foreign investor in the domestic economy is a foreign multinational rather than a foreign individual?

If portfolio investment and FDI are perfect substitutes for foreign investors, then they should be taxed equally. Productive efficiency then argues for a zero net tax on the earnings of such foreign subsidiaries operating in the domestic economy.

Foreign multinationals inevitably have at least some domestic shareholders. The optimal tax treatment then would aim to impose domestic corporate taxes on the earnings of these subsidiaries to the degree that they have domestic shareholders, and otherwise to exempt their earnings from domestic taxes. The mechanism proposed above would be to impose domestic corporate taxes on these firms, but to allow expensing of capital investment to the degree that the firm has foreign shareholders.

The multinational as a whole may well earn profits above the normal rate of return to capital, due to the value of the entrepreneurial ideas generating demand for the firm's products. These entrepreneurial profits would not show up in the subsidiary's tax base under arm's length pricing, however, being fully offset by royalty payments to the parent firm for use of the ideas/technology generating these higher returns.

The presence of above-normal returns to the foreign subsidiary raises two issues not present with inbound portfolio investment. First, would the host-country government want to impose a tax on these above-normal returns? Arm's length pricing would leave zero profits in the host country, so that any tax requires restrictions on royalty deductions. In addition, if the earnings of the subsidiary are already full taxable under the firm's home-country tax structure, as argued above, then any further taxation by the host-country government would create a tax incentive to shift all profits out of the host country.

In order to assess the incentives faced by the host-country government, consider alternative sources of above-normal returns. One source of above-normal returns could be monopoly profits on the sale of a unique product to domestic customers. Here, the optimal VAT or retail sales tax could well be positive, to try to transfer some of the monopoly profits to the domestic economy. However, there are no grounds for the tax to vary depending on whether the goods are produced in the domestic economy through a foreign subsidiary or instead are imported from abroad.

Another source of above-normal returns could be valuable domestic infrastructure or a valuable legal system, e.g. protection of intellectual property, which together make the subsidiary more profitable than it would be elsewhere. If all firms benefit equally from these aspects of the domestic economy, then domestic land prices and/or domestic wage rates will be bid up to the point that all firms break even, including foreign subsidiaries. However, the benefits may matter primarily for selected firms, e.g. those with important intellectual property, and these firms may in equilibrium earn above-normal profits. Firms with substantial intellectual property are more likely to become multinationals.

To the extent that a country is not a price taker in the market for attracting profitable subsidiaries of foreign multinationals, the incidence of any corporate tax on these firms should fall in part on the firms, rather than entirely on domestic factors (workers) employed by these firms. What is the evidence? Two recent papers by Mathur and Hassett (2006) and by Arulampalam (2007) both examine the incidence of the corporate tax, and find that it is largely shifted to domestic workers through a lower wage rate, consistent with full shifting of the benefits from domestic infrastructure through higher wage rates to domestic workers .

Given standard errors, though, estimated coefficients cannot rule out some fraction of the burden falling on firms rather than their workers. In this case, the optimal tax on the foreign subsidiary would be positive. In particular, consider a tax at rate τ on the firms' pure profits, defined to equal revenue minus labor and capital costs but with any deduction for royalty payments disallowed:[15] $\Pi = pQ - wL - rK$. Assume that output prices and the interest rate are set in the world market and do not change in response to taxes on the pure profits of these foreign subsidiaries. The tax then either falls on workers through a fall in their wage rate *w* or it falls on the firm's shareholders. Let the fraction of the tax falling on workers be denoted by α . Assume that the government adjusts personal income tax schedules to leave the net-of-tax wage rate unaffected, implying no resulting change in labor supply. The only impact of the tax on the domestic economy is therefore on tax revenue, and tax rates should be set to maximize tax revenue.

Tax revenue equals $\tau\Pi + T(wL)$, where $T(wL)$ is the personal income tax schedule. The value of τ that maximizes tax revenue, given the simultaneous adjustment in the personal tax schedule to leave workers unaffected on net satisfies:

$$\Pi + \tau \frac{\partial \Pi}{\partial w}\frac{\partial w}{\partial \tau} + \tau \frac{\partial \Pi}{\partial \tau}\Big|_w - L\frac{\partial w}{\partial \tau} = 0 \quad (5)$$

Given our assumption that workers bear α % of the tax, we know that $\frac{\partial w}{\partial \tau} L = -\alpha \frac{\Pi}{1-\tau}$. Also, let $\varepsilon = \frac{1-\tau}{\Pi}\frac{\partial \Pi}{\partial (1-\tau)}\Big|_w$ denote the elasticity of the tax base with respect to the fraction of profits kept by the firm, holding the wage rate fixed.

Substituting, we find that $\frac{\tau}{1-\tau} = \frac{1-\alpha}{\varepsilon}$. If the incidence of the tax falls entirely on workers, then foreign subsidiaries should be exempt from domestic taxation. As an alternative example, if workers bear 80% of the tax, and $\varepsilon = .4$, implying only a moderate responsiveness of firms to the tax, then the equation implies $\tau = .33$. In contrast, if $\varepsilon = 1$, then the optimal corporate rate satisfies $\tau = .167$. With a statutory tax rate around $\tau = .33$, the first case implies denying any deductions for

[15] Even if the firm earns above-normal profits, it should still be a price taker in the market for capital, implying that the optimal tax rate on capital investments by the subsidiary remain equal to zero.

royalty payments while the second imply restricting them to about half of an arm's length price.

This taxation of the above-normal profits of foreign subsidiaries that locate in the country in part is serving as an optimal tariff, being used whenever the country is not a price taker in the market for subsidiaries (when $\varepsilon<\infty$). In addition, however, these taxes help internalize a positive externality to foreign firms in response to domestic investments in infrastructure and in the design of better legal codes. Only with such taxes would the host country face appropriate incentives when considering such investments, from a global perspective.

Even if the government can impose effective restrictions on royalty deductions, however, firms have available many other ways to shift profits between countries, including the location of debt finance and transfer pricing. Since the firm's home-country government is taxing its worldwide profits at a common rate under the optimal tax structure, any additional tax imposed in the host country creates a financial incentive to shift its profits elsewhere. Grubert (1998) in fact estimates that foreign subsidiaries in the U.S. have very low taxable income under U.S. tax law, in part due to royalty payments, in part due to heavy use of debt finance, and presumably in part due to use of transfer pricing.

Such income shifting, though, needn't transfer profits back to the parent firm, but likely instead transfers these profits to other subsidiaries operating in low-tax countries. This income shifting therefore can undermine not only the home country taxation of the above-normal profits accruing in foreign subsidiaries, but also the corporate taxation of the retained earnings of the domestic parent firm. Without an effective supplementary corporate tax, domestic savers and workers can simply face domestic capital gains taxes on these retained earnings. This income shifting thereby undermines the personal taxation of domestic residents as well as any attempt by host-country governments to tax the entrepreneurial rents accruing in foreign subsidiaries locating in the country.

e. Nationally optimal policies vs. globally optimal policies

The above discussion focuses on the policy choices of any given country, taking as given the policy choices elsewhere in the world.

To what degree, though, are there fiscal externalities across countries? When fiscal externalities exist, then the policies that are optimal for each country in isolation are not globally optimal, implying welfare gains from policy coordination across countries.

Marginal changes in policy in any country certainly affect domestic labor supply and savings decisions. These changes can affect equilibrium market prices, but if countries are small these effects can be ignored.

In addition, however, marginal changes in tax policy in a country can potentially affect tax revenue abroad. Changes in domestic savings decisions to begin with affect both outbound and inbound FPI . Under the optimal tax policies, any changes

in outbound FPI are untaxed abroad so have no fiscal implications for foreign countries. Offsetting changes in inbound FPI again have no effects on tax revenue abroad, given that the optimal tax rate is the same on the return to savings regardless of the country in which the investment takes place.

Changes in domestic labor supply and savings can also affect outbound and inbound FDI. Changes in inbound FDI again have no effect on tax revenue abroad, under optimal policies. If the income accruing to multinationals faces the same home-country tax rate regardless of the source of the firm's income, any firm just indifferent to moving must have the same earnings pre-home-country corporate taxes, implying no effects of its location decision on home-country tax revenue.

What about changes in outbound FDI? Capital flows through these foreign multinationals can change in response to savings decisions, but these are untaxed in foreign countries under the above policies. Changes in tax structure can eventually affect the rate of creation of new technologies and in the pure profits accruing to multinationals abroad. As argued above, host-country governments may try to tax these pure profits earned by foreign multinationals, by restricting royalty deductions. Here, there can be fiscal spillovers if, contrary to the evidence in Grubert (1998), countries are able to impose tax on the pure profits earned by foreign subsidiaries that locate in the country.

Except for this possible exception arising from the taxation of outbound FDI, we find, as argued by Razin and Sadka (1991), that the nationally optimal policies are also globally optimal.

The existing academic literature focuses on a variety of neutrality conditions that it argues the optimal policies should satisfy. To what degree would the optimal policies satisfy each of the proposed criteria?

One such criterion is "capital import neutrality, or CIN. Under this criterion, capital invested in a country should face the same tax rate, regardless of the country of residence of either the firm undertaking the investment or the individual investor financing the investment. This condition would not hold under the optimal policies described above. Capital invested in a country would face no taxation from the host-country government, but the resulting income accruing to the individuals owning the return to this investment would be taxed at a rate varying by the country of residence of these individuals.

Another commonly discussed criterion is "capital-export neutrality", or CEN. According to this criterion, capital investments undertaken by residents in a country should face the same tax rate regardless of the location of the investment. This condition does hold under the optimal policies described above. Capital investments would face the same domestic tax rate n, regardless of the country in which the investment occurs, while the host country would impose no net tax on capital investments in the country, given expensing.

A third criterion that has been introduced into the discussion by Desai and Hines (2003) is "capital-ownership neutrality", or CON. Under this criterion, the tax rate faced on the return to the capital invested in a firm should be unaffected by the

identity of the individual or country of origin investing in the firm. This is clearly violated due to differences in *n* both within a country due to progressive rate schedules and across countries due to differences in optimal tax rates.

Except for CEN, therefore, these neutrality conditions do not help identify tax structures that approximate optimal tax policies.

3. Actual tax treatment of cross-border activity

The actual tax treatment differs extensively from the optimal tax treatment forecast above. How do we best explain why countries are so systematically choosing policies different from those that the above models forecast would be optimal? What omissions from the above model might help explain why observed policies deviate from those forecast by the theory?

a. Description of the key differences between optimal and actual tax provisions

The actual tax law differs in a variety of ways from the tax law forecast above. For one, inbound FDI and FPI are both subject in full to domestic corporate taxation, and may face additional withholding taxes on cross-border payments. The above model, in contrast, forecasts no net taxation of income accruing to portfolio investments, though is less clear about the optimal taxation of inbound FDI.

Outbound FPI faces accrual taxation under the personal tax on the resulting financial income to individual shareholders, as forecast by the theory. However, no attempt is made to impose domestic corporate taxes on the underlying income accruing abroad.

Consistent with the above theory, domestic multinationals in the U.S. do owe domestic corporate taxes on their foreign source earnings. However, this tax is not assessed at accrual but only when the resulting profits are repatriated. To the extent that there is a tax on the return to savings, this deferral of tax payment lowers the present value of the resulting liabilities.

In most major countries other than the U.S., foreign-source earnings of home-country multinationals are exempt from domestic taxation, receiving a “territorial” tax treatment. Here, the differences from the tax structure forecast from the theory are particularly stark.

Another difference from the tax policies forecast above is the availability of tax credits for any taxes paid abroad, up to the amount of taxes due in the home country. Of course, the above theory forecasts no taxes due abroad that could quality for such credits, except perhaps for FDI abroad by domestic multinationals.

b. Possible explanations for the deviation between optimal and actual tax provisions

While in general the differences between the optimal and actual tax provisions seem stark, these differences largely disappear if in fact $n \approx 0$, implying no desired tax on income from savings.

With $n \approx 0$, the tax treatment of firms operating in the domestic economy no longer depends on the country of residence of its shareholders: all investment qualifies for expensing and not just that fraction owned by foreign shareholders. This reconciles the observed tax treatment of both FDI and FPI in the home country with the optimal tax treatment.

With $n \approx 0$, there is also no need to impose corporate tax on portfolio investments abroad, since the resulting corporate tax (with expensing) would collect no net revenue on the return to passive financial investments.

There would still be grounds, however, for imposing a domestic corporate tax on the profits generated abroad by FDI undertaken by domestic multinationals since here there are likely to be above-normal profits, representing a return to past entrepreneurial efforts by domestic entrepreneurs. When $n \approx 0$, however, the form that this tax takes becomes much more flexible. While it remains appropriate to tax the above-normal profits each year at accrual, it is equivalent in present value simply to tax all repatriated profits. To avoid in the process introducing a net tax on the return to savings invested in such firms, the law could allow an immediate deduction for all funds sent abroad, which compensates in present value for the taxes due on all funds generated from these investments that are later repatriated. This difference between accrual taxation and taxation at repatriation is equivalent to the difference between taxation each year of wage income and the taxation on receipt of pension benefits.[16]

Current tax law does not allow an immediate deduction for funds sent abroad, instead exempting from tax the eventual return of capital. This difference matters only to the degree that the earnings of the foreign subsidiary represents a return to invested capital rather than a return to the ideas generating the demand for the multinational's product.

The argument that existing tax structures broadly correspond to the optimal policies discussed above then rests on two premises. First that $n \approx 0$ and second that the foreign-source earnings of a multinationals are only secondarily a return to capital investments abroad by the multinational.

To what degree does the existing tax law differ from what would exist with $n \approx 0$? Gordon and Slemrod (1988) examined in particular how much tax revenue would have been lost in the U.S. in 1983 if statutory tax rates were left unchanged but the tax base were adjusted to eliminate any taxes on income from savings and on

[16] With the tax based simply on funds leaving or entering the country, there is no need to deal with the auditing or taxation of foreign corporations, or to document the portfolios of domestic investors, as long as cross-border payments can be identified and traced to their recipient.

capital investments in the U.S.[17] The paper found a slight *increase* in tax revenue from this change, suggesting no tax revenue on net was being collected on the return to savings and investment in the U.S. Gordon, Kalambokidis, and Slemrod (2004b) redid this study using U.S. data for 1995 and found that tax revenue would fall slightly in response to these tax changes, but very slightly. Gordon, Kalambokidis, and Slemrod (2004a) then show that this lack of revenue from taxes on the return to savings does indeed suggest under reasonable assumptions that savings incentives on average are largely undistorted by the existing tax law, even though this is certainly not the case for every individual and every form of investment.

Note that this taxation at repatriation rather than at accrual leads to neutral incentives only if the corporate and personal tax rates are constant over time. If rates change, then the firm has an incentive to time its repatriations for years in which the tax rate is low. Any such fluctuations in tax rates then generate tax distortions to the *timing* of repatriations. This opportunity to shift taxable income over time to take advantage of any fluctuations in tax rates makes at least some investments abroad more attractive than investments at home. For example, the one-year reduction in the corporate tax rate faced on profits repatriated to the U.S. in 2005, created an ex post reduction in the effective tax rate on entrepreneurial income generated abroad, and increased the ex ante expectation of more such opportunities in the future. The resulting incentives to postpone repatriations in the hopes of additional such holidays in the future creates efficiency costs from this use of a tax at repatriation instead of taxation each year on accruing income abroad.

Even if we attempt to rationalize varies features of actual tax laws by assuming that $n \approx 0$, we are left with at least three puzzles: First, why have some countries chosen to exempt foreign-source income of their domestic multinationals from tax at repatriation (a "territorial" treatment)? Second, why do countries grant credits for corporate and withholding taxes collected by host-country governments on the income accruing to home country firms and home-country residents? And third, why do host countries tax foreign subsidiaries at the same rate as applies to domestic firms in the host country?

Of course, a quick answer is that OECD conventions *require* either a "territorial" treatment or use of crediting. The question is then why these policy rules have remained in force for so many years, an outcome that seems implausible if countries view these rules to have significant costs.

Begin with the question why countries may adopt a "territorial" treatment for their domestic multinationals. Doing so exempts the foreign-source earnings of their domestic entrepreneurs from tax, and enables these entrepreneurs to avoid tax on their domestic-source activity through use of transfer pricing to make these earnings appear to be foreign source. However, "territorial" treatment also eliminates any tax distortion affecting the timing of repatriation.

[17] In particular, the paper examined the impact on tax revenue of replacing depreciation deductions on any new investment with expensing, and eliminating all taxes (both corporate and personal) on interest, dividend, and capital gains income, and eliminating any deductions (corporate and personal) for interest payments.

The latter is a clear benefit from use of a "territorial" treatment. The question is why countries act as of the offsetting costs are so low. Allowing domestic entrepreneurs to avoid tax through shifting their earnings abroad creates a tax distortion favoring entrepreneurial activity and favoring opening up a foreign subsidiary. Due to information spillovers, economists commonly argue that there is too little entrepreneurial activity. Whether this tax avoidance opportunity is the best means of encouraging more entrepreneurial activity can be questioned, but it does serve this role.[18] There may be additional informational spillovers generated when firms become multinationals, since these multinationals pick up ideas abroad that then filter through to other domestic firms. Allowing tax avoidance linked to having a foreign subsidiary encourages firms to become multinationals. The U.S. may have many other policies in use to encourage entrepreneurship compared with those in place in territorial countries, lessening the value of making use of this instrument to encourage entrepreneurial activity.[19]

How can we best explain the granting of credits for taxes paid abroad on income accruing to domestic residents? To explore this question, we develop a variant of the model in Gordon and Mackie-Mason (1995). The key addition to the above analysis is the assumption that all employees can potentially engage in income shifting between the corporate and the personal tax base, and not just the entrepreneur.

In particular, assume that a firm's domestic production function is $f(K,L)$ while its production function abroad is $f^*(K_s^*, L_s^*)$, where both production functions have decreasing returns to scale.[20]

The objective function of the firm is to maximize the firm's overall net-of-tax profits. The foreign subsidiary is assumed to be a price taker in the labor market, and must provide workers with a net-of-tax income equal to $w_n^* L_s^*$. It can pay workers, though, either through taxable wages, $w^* L_s^*$, or through non-wage and non-taxable compensation $n^* L_s^*$. While wage compensation is taxable to the individual and tax deductible to the firm, we assume that non-wage compensation is neither taxable nor tax deductible.[21] Total compensation must be sufficient to

[18] Gordon and Cullen (2006) argue in contrast that increasing the tax savings on business losses is a much more effective means of encouraging entrepreneurship than reducing the tax rate on the most successful business outcomes, since given risk aversion potential losses are more salient than potential profits.

[19] For example, venture capital funding is much better developed in the U.S. There are fewer labor market restrictions that hinder entry and exit decisions, or hiring and firing decisions. Bankruptcy rules in the U.S. are more favorable to the debtor.

[20] Implicit in this specification is the assumption that the foreign subsidiary can earn these pre-tax profits *only* by locating in this particular host country. If the location of these facilities is more flexible, then there are additional pressures to keep host-country tax rates low.

[21] An example of such compensation in the U.S would include incentive stock options in the firm, which by statute receive this tax treatment. Another example could be equity compensation in a closely-held firm. By statute, workers are taxed on the market value of

provide workers a net-of-tax wage rate of w_n^i : $\left(w^i\left(1-m^i\right)+n^i\right)=w_n^i$. Use of non-wage compensation also comes with a cost $c\left(f_L^i-w^i\right)L_s^i$, where $c(.)$ is assumed to be a convex non-negative function with a minimum value of zero at $w^i=f_L^i$. We assume as well that $w^i\leq f_L^i$: non-wage compensation must be non-negative.

To avoid the equivalent income shifting by the employees of the parent firm, we assume that the domestic government has set $\tau=m$.

The multinational will also charge its subsidiary royalty payments *S* for use of the firm's technology. Arm's length pricing would leave the subsidiary with zero net profits (after deducting capital as well as labor expenses), giving the parent firm the full return to the technology it developed. The firm, though, can choose the royalty payment to charge the subsidiary, but its choice generates real costs equal to $\sigma\left(S*-S\right)$, where $\sigma(.)$ is a non-negative convex function with a minimum at zero costs when S equals the arm's length price S^i . The choice for S can be at most the arm's length price, since any higher S leaves the subsidiary with negative profits.[22]

The after-tax income to the firm then equals

$$\begin{aligned}&\left(1-\tau\right)\left[f\left(K,L\right)-rK-wL+S-\sigma\left(S\right)\right]\\&+\left(1-\tau_s\right)\left\{\left(1-\tau_s^i\right)\left[f^i\left(K_s^i,L_s^i\right)-rK_s^i-w^iL_s^i-c\left(f_L^i-w^i\right)L_s^i-S\right]-\left(w_n^i-w^i\left(1-m^i\right)\right)L_s^i\right\}\end{aligned} \tag{6}$$

Here, profits of the foreign subsidiary are subject to tax by both the host-country (τ_s^i) and the home-country (τ_s), with each rate potentially different from the corporate tax rate that applies to purely domestic firms in each country. The host-

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this compensation, and the firm can take this market value as a tax deduction. However, when the firm is closely held, there are no data on the market value of these shares, giving the firm great discretion in asserting a market value of this compensation for tax purposes. If $\tau<m$, the firm has the incentive to claim that the shares have no value, and we assume above that this claim will be accepted by the IRS. Other types of compensation are untaxable to the worker but still deductible expenses for the firm, e.g. a fancy office. Qualitatively, results will be the same if the firm's deductions are not lost with the alternative compensation.

[22] We assume here that the host country cannot obstruct these royalty deductions, contrary to the discussion above.

country taxes the accruing income, whereas the home country taxes repatriated profits.[23] For convenience, let $\tau_s^a \equiv \tau_s^* + (1-\tau_s^*)\tau_s$.

The firm's optimal choices for capital and labor satisfy the following first-order condition:

(7a) $$(1-\tau)(f_K - r) = (1-\tau_s^a)(f_K^* - r) = 0$$, and

(7b) $$(1-\tau)(f_L - w - c) = (1-\tau_s^*)(f_L^* - w^* - c^*) - (w_n^* - w^*(1-m^*)) = 0$$

Since non-wage compensation must be non-negative, we conclude that $f_L^* - w^* - c^* \geq 0$.

The first-order condition for the firm's choice of royalty payment to charge the subsidiary equals

(8) $$\sigma' = \frac{\tau - \tau_s^a}{1-\tau_s^a}$$

with $S = S^*$ when $\tau_s^a \geq \tau$.

Consider next the firm's optimal choices for taxable compensation w^* . The first-order condition here is

(9) $$c' = \frac{m^* - \tau_s^*}{1-\tau_s^*}$$.

Tax distortions to forms of compensation exist to the extent that the tax term is positive. (If the tax term is negative, then all compensation takes the form of wage payments.)

Consider the Nash equilibrium policy choices of each government, taking as given the policy choices of the other government. Our focus is on the choices for τ_s by the domestic government and for τ_s^* by the foreign government.

[23]With a tax on repatriated funds, non-deductible labor expenses are still a cost of business, thereby reducing the amount of repatriated profits. Rather than giving the parent firm an immediate deduction for capital invested in the subsidiary and then a full tax on all repatriated earnings from the investment, for convenience in the analysis we allow the opportunity cost of the capital as a deduction each year: both approaches yield no net tax on the return to capital invested in the subsidiary.

The domestic government is assumed to choose its tax rates to maximize the sum of the after-tax firm profits on both domestic and foreign operations plus tax revenue: workers and capital owners get the going returns, regardless of these choices. The domestic government is then choosing its tax rates to maximize:

$$f(K,L)-rK-wL-\sigma(S^{i}-S) \\ +(1-\tau_s^{i})[f^{i}(K_s^{i},L_s^{i})-rK_s^{i}-c(f_L^{i}-w^{i})L_s^{i}]-(w_n^{i}-w^{i}(\tau_s^{i}-m^{i}))L_s^{i}+\tau_s^{i}S \tag{10}$$

Domestic tax rates enter implicitly in this equation through their impact on the allocation choices made by domestic multinationals.

The first-order condition for τ_s is simply:

$$(\sigma'+\tau_s^{i})\frac{\partial S}{\partial \tau_s}=0 \tag{11}$$

Through use of τ_s, the domestic government gains from discouraging domestic multinationals from shifting their profits abroad. At the optimum, $\tau_s^{a}=\tau$. At this rate, there is no longer any transfer pricing from the parent firm, reducing the subsidiary's taxable profits to zero.

What would be the objective of the host country? Certainly it gains from extra tax revenue. Since workers in the subsidiary are simply paid their opportunity cost, they break even by working for the subsidiary. Any decreased demand for labor by the subsidiary, though, in principle causes a fall in the equilibrium w_n and/or a fall in L_s^{i}. For simplicity, we assume that purely domestic firms have constant returns to scale and are price takers in the international market, so that their labor demand will expand to ensure full employment at the original wage rate faced by domestic firms of $w_n^{i}/(1-m^{i})$. With an unchanging net wage rate, aggregate labor supply L^{i} is unchanged and overall labor demand is unchanged. Any changes in labor demand by the subsidiary are simply offset by changes in labor demand by domestic firms. With unchanging factor and output prices for residents in the country, the host-country government is choosing τ_s^{i} to maximize tax revenue, of which the relevant components are :

$$\tau_s^{i}[f^{i}(K_s^{i},L_s^{i})-rK_s^{i}-(w^{i}+c^{i})L_s^{i}-S]+m^{i}[w^{i}L_s^{i}+\frac{w_n^{i}}{1-m^{i}}(L^{i}-L_s^{i})] \tag{12}$$

The first-order condition for τ_s^{i} can then be written:

$$(w_n^i - w^i(1-m^i))\left(\frac{\tau_s^i}{1-\tau_s^i} - \frac{m^i}{1-m^i}\right)\frac{\partial L^i}{\partial \tau_s^i} + (\tau_s^i c' + m^i - \tau_s^i)L^i\frac{\partial w^i}{\partial \tau_s^i} = 0 \quad (13)$$

.

The first term is zero if $\tau_s^i \geq m^i$, since then there is no income shifting by domestic workers: labor costs as a result are fully deductible, implying that $\partial L_s^a / \partial \tau_s^i = 0$. Otherwise, the resulting fall in labor demand generates a positive effect on welfare due to the higher domestic tax rate on labor elsewhere in the economy. The second term, reflecting the drop in income shifting by employees of the subsidiary, is also positive as long as $\tau_s^i < m^i$, and not otherwise.

At the optimum, we then infer that $\tau_s^i = m^i$, to forestall income shifting by the employees of the subsidiary. Given this optimal host-country rate, to achieve $\tau_s^a = \tau$ we then infer that the home country will set

$$\tau_s = \frac{\tau - \tau_s^i}{1-\tau_s^i} \quad (14)$$

Remarkably, this optimal tax rate replicates the tax rate that arises under existing OECD rules governing use of worldwide taxation. Rather than being taxed on repatriated profits, home-country taxes instead are imposed on the underlying firm profits prior to host-country taxes. Host-country taxes are then granted as a credit against home-country tax liabilities. Given that OECD rules replicate optimal policies, it is not surprising that they have survived for as long as they have.

4. Conclusions

How should multinationals be taxed? How are they taxed? To the extent that the answers differ, how do we best explain the difference?

In this paper, we first derived the optimal tax treatment of foreign subsidiaries by both home and host-country governments, and found that the home country government should subject the profits of these foreign subsidiaries to domestic corporate taxation at accrual, while the host-country government would (under certain assumptions) exempt this income from tax.

In practice, in contrast, we observe that some home countries do tax the foreign-source income of their multinationals, but only at repatriation and with a credit for any taxes paid abroad. In addition, host-country governments tax these profits at the same rate that applies to their domestic firms.

Part of the reason for these observed policies could be OECD guidelines. But the question is then why these guidelines survive, if according to the theory they are contrary to the policies that would be in each country's interests.

We argue that the forecasted policies can be reconciled with observed policies if two conditions exist. First, countries do not aim to tax the income their residents receive on their savings. Without a tax on the return to savings, deferring the tax on the foreign-source earnings of domestic multinationals until repatriation creates no problems.

The second condition is that income shifting by employees of firms between the corporate and the personal tax base is an important consideration in the design of tax law in the host-country. Such income shifting creates pressures on the host-country to tax the income of foreign subsidiaries locating in the country at the same rate that applies to domestic firms, to forestall such income shifting. Given such taxation in the host country, we find that the optimal tax policy in the home country is to ensure that the combined tax rate on the income of the subsidiary is the same as applies to the income of domestic firms in the home country. The resulting optimal tax rate replicates OECD rules, with home country taxes applying to profits before host-country taxes, but with a credit against home-country taxes for those taxes paid in the host country.

A remaining puzzle is why many countries choose not to tax the foreign-source income of their domestic multinationals. Here, the best answer we could come up with is that this favorable tax treatment leads to a lighter effective tax rate on entrepreneurial income. Entrepreneurial income accruing through foreign subsidiaries becomes exempt from domestic taxes while income shifting from the parent to foreign subsidiaries can exempt domestic-source entrepreneurial income from tax as well. Perhaps the explanation for these policies is a desire to encourage entrepreneurship, and also to encourage domestic firms to become multinationals, in order to pick up valuable ideas abroad that then become available more broadly in the domestic economy.

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